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Unit Cohesion, Attachment, Personality Factors, and Mental Health in Veterans of Iraq and Afghanistan

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To the Graduate Council:

I am submitting herewith a dissertation written by Allison Adrienne Whitesell entitled "Unit Cohesion, Attachment, Personality Factors, and Mental Health in Veterans of Iraq and Afghanistan." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

Gina P. Owens, Major Professor

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UNIT COHESION, ATTACHMENT, PERSONALITY FACTORS, AND MENTAL HEALTH IN VETERANS OF IRAQ AND AFGHANISTAN

A Dissertation Presented for the

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DEDICATION

This project is dedicated to the combat veterans who have fought and continue to fight in Operations Iraqi and Enduring Freedom, as well as to the war fighters who came before them. Thank you to all those veterans who gave your time and attention to participate in this study, discuss research ideas, contact other interested veterans, and share the details of your own emotional journeys with me.

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ABSTRACT

One hundred forty seven veterans of Operations Iraqi Freedom (Iraq) and/or Enduring Freedom (Afghanistan) completed an internet survey with questions related to unit cohesion, romantic attachment style, personality factors, and mental health symptoms. Participants completed five self-report measures: the PTSD Checklist-Military, the Hopkins Symptom Checklist-21, Deployment Social Support scale from the Deployment Risk and Resiliency Inventory, the Experiences in Close Relationships Scale-Short Form, and the International Personality Item Pool Big Five Short Form Questionnaire. Most participants were male and Caucasian. Hierarchical linear regression analysis results indicated that emotional stability predicted both general distress and PTSD symptom severity, while avoidant attachment was a predictor of PTSD severity and extraversion was a predictor of general distress severity. An interaction between conscientiousness and anxious attachment was present in both models, with secure attachment moderating the relationships between conscientiousness and dependent variables (PTSD and general psychological distress). Results of this study indicate that emotional stability, extraversion, conscientiousness, and secure attachment styles (low anxious and avoidant attachment) are important in the post-combat mental health symptom constellation and promotion of these traits by military leaders could benefit service members.

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Chapter 1

Introduction

The number of veterans returning home from war zones climbs daily as the Unites States continues to participate in two concurrent wars. Veterans of combat are exposed to traumas which may impact them for life and are at risk for not only mental health but also relationship problems. Diagnoses such as Post Traumatic Stress Disorder (PTSD), depression, alcohol abuse, and anxiety commonly develop after combat exposure and many of these diagnoses can be experienced at the same time (Hoge et al., 2004). A 2004 study showed that upon returning from deployment to Afghanistan, 14% of veterans met broad criteria for depression, 17% for an anxiety disorder, and 12% for PTSD (Hoge et al., 2004). Comparable statistics for veterans upon return from Iraq showed 15% meeting broad criteria for depression, 18% for an anxiety disorder, and 18% for PTSD (Hoge et al., 2004). Reports of wanting or needing to reduce drinking behaviors from veterans of Iraq and Afghanistan are relatively frequent (Hoge et al., 2004). Relationship difficulties also are well-documented for combat veterans, including high marital instability (Evans, McHugh, Hopwood, & Watt, 2003; Kessler, 2000; Nice, McDonald, & McMillian, 1981) and high divorce rates for those with PTSD (Cook, Riggs, Thompson, Coyne, & Sheikh, 2004). For these reasons, it becomes increasingly important that we understand the relationships between factors which may affect the daily lives and psychological well-being of the war fighter.

Veterans of the current wars in Iraq (Operation Iraqi Freedom or OIF) and Afghanistan (Operation Enduring Freedom or OEF) are subjected to many conditions which put them at risk for experiencing psychological distress, such as altered and difficult family situations (Sherman,

Zanotti, & Jones, 2005); PTSD (Hoge et al., 2004); and loss of relationships due to frequent moves, reassignment, and deployment (Gambardella, 2008). Combat veterans also experience war-zone and mission-related stressors in addition to these interpersonal stressors (Vogt, Samper, King, King, & Martin, 2008). Multiple dynamics may contribute to an individual's experience of these psychological symptoms, but the present study focuses on the impact of attachment and closeness in interpersonal relationships and personality factors.

Post Traumatic Stress Disorder

Post Traumatic Stress Disorder is a debilitating psychological disorder which often has a duration of many years (Kessler, 2000). Its manifestation includes three symptom clusters, re-experiencing symptoms (nightmares, flashbacks), avoidance symptoms (avoiding reminders of the event, feeling distant from others), and hyperarousal symptoms (difficulty sleeping, being easily startled) (American Psychiatric Association, 2000). Between 12 and 15% of veterans returning from the current wars in Iraq and Afghanistan meet diagnostic criteria for PTSD (Hoge et al., 2004). Research shows that a wide variety of comorbid disorders can appear along with PTSD, such as depression, substance use disorders, and other anxiety disorders (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kulka et al., 1990). Further, suicide rates are particularly high for those with PTSD (Kessler, 2000). Lastly, veterans with PTSD show high rates of severe relationship problems, divorce and multiple divorces, and verbal and physical aggression toward partners relative to their veteran counterparts without PTSD (see Monson & Taft, 2005 for a review). Given the debilitating effects of this disorder and its prevalence in the combat veteran population, research into factors which affect its severity is of primary importance.

Interpersonal Relationships

Interpersonal relationships can be an important coping resource for those going through difficult situations (Cobb, 1976). The experience of intimacy through camaraderie between fellow service members (Martin, Rosen, Durand, Knudson, & Stretch, 2000) and in family relationships (Evans, Cowlishaw, & Hopwood, 2009) are aspects of interpersonal functioning which impact the daily lives of service members and have been shown to be important factors in their mental health functioning. Because longitudinal research has shown that family relationship functioning is a predictor of PTSD symptom change in veterans (Evans et al., 2009), examining the associations between romantic relationship attachment styles and psychological distress symptomatology is an important research focus. The following sections will review literature related to two aspects of interpersonal relationships that may affect PTSD severity or general distress among military personnel, romantic relationship attachment styles and unit cohesion.

Impact of Deployment on Family/Romantic Relationship

According to the National Healthy Marriage Resource Center (2006), half of all military personnel are married, 90% of the spouses are women, and 7% are in marriages in which both partners are military. There has been a growing amount of literature on military veterans and their relationships with spouses and romantic partners. Being involved in a romantic relationship while working in the military poses unique challenges to the experience of a service member and to their partners and families, including physical separation, frequent moves, loss of jobs for spouses, and parental absences (Gambardella, 2008). Multiple studies show that combat veterans show high rates of instability and distress in their marriages (Evans et al., 2003; Kessler, 2000; Nice et al., 1981). Difficulty in relationships with spouses, children, and friends are

particularly common in the reports of Iraq and Afghanistan veterans using VA medical services (Sayer et al., 2010).

Increasing their impact, family members make up the social structure which encompasses a veterans' environment outside of the military and also may impact psychological distress. Thus, the level of stability in these relationships may impact the veteran's ability to recover from psychological distress symptomatology (Evans et al., 2009). If a veteran's post-deployment experiences include family disruption, poor social support, fear of redeployment, and/or the experience of unpredictable posttraumatic symptoms, they may be less likely to assess the world as a safe, predictable, and supportive place (Grantz, 2007).

Individuals who exhibit secure attachment styles are more capable of intimacy and emotional closeness with romantic partners (Hazan & Shaver, 1987). Intimacy is an essential element of happy romantic relationships and is also related in many ways to psychological, physiological, and physical health (Moss & Schwebel, 1993). Effects of combat, such as interruptions in forming one's personal identity and self-understanding, create problems in intimate relationship functioning for veterans (Silverstein, 1994). Not surprisingly, such emotional changes may have a negative impact on marital satisfaction, relationship quality, and spousal support (Riggs, Byrne, Weathers, & Litz, 1998), especially when considered in addition to the toll taken by physical separation and frequent moves (Gambardella, 2008). In this way, the impact of attachment on intimacy capabilities in romantic relationships becomes an important factor to explore in military veterans. Although there is some literature available on the effects of a partner serving in the military on relationship functioning (Solomon, Dekel, & Zerach, 2008;

Teachman, 2009), no current research has examined relationship attachment style and its relationship to PTSD severity and general psychological distress levels among veterans.

Attachment and Distress

Problems in romantic attachment may occur when a partner experiences a traumatic event which compromises his or her psychological health (Solomon et al., 2008). The combat veteran's ability to trust, share, and be close to another may be compromised (Mills & Turnbull, 2001). Significant relationship problems often follow when one partner is suffering from psychiatric symptoms (Snyder & Whisman, 2004). The veteran in this case may also see changes in ability to trust, share with their partner, and be emotionally close following this psychological injury (Mills & Turnbull, 2001). These changes negatively impact marital quality, marital satisfaction, and potentially spousal support (Beiser, Turner, & Ganesan, 1989; Riggs et al., 1998).

The "interpersonal model" proposed by Horowitz (2004) hypothesizes that personality traits and coping are learned from others in the child's early familial environment and that if this environment offers chronic vulnerability, a child will expect to find their needs unmet in future romantic relationships. In times of stress, these partners may then revert to coping strategies consistent with the interpersonal coping style that they learned early in life (Amato, 1996), which may lead to further relationship problems. It is possible that these early coping strategies may also be activated by the stress of military service.

One half of all civilian first marriages end in divorce currently (Raley & Bumpass, 2003), a statistic which does not also consider the special additional stresses for families in which one member serves in the military. Evidence suggests, however, that combat veterans suffering from

psychological distress, particularly PTSD, show high rates of divorce and marital distress (Evans et al., 2003; Jordan et al., 1992; Nice et al., 1981). Combat veterans' romantic and family relationships have been shown to have a bidirectional interaction with the experience of stress and trauma symptoms, so either maladaptive or adaptive outcomes may be experienced at the family level (Nelson Goff & Smith, 2005). Research has suggested that family dysfunction and distress are positively associated with PTSD symptoms (Evans et al., 2003). Thus, when family stress is higher, PTSD severity also tends to be higher. It has also been suggested that one's family functioning is associated with the ability to recover from psychological disorders (Whisman, Uebelacker, & Bruce, 2006) and from depression specifically (Miller et al., 1992). This research evidence supports the relationships between family and couple functioning and psychological distress symptom expression. Couple relationships have been deemed important enough that they are being included as a part of treatment models for combat veterans (Evans et al., 2009; Monson, Fredman, & Adair, 2008; Sherman et al., 2005). However, research indicating in what way romantic relationships are associated with PTSD symptoms has been limited.

When a military partner is deployed (sent away for military duty), their spouse loses an element of emotional support from their partner and often takes over increased responsibilities (Gambardella, 2008). These adjustments can bring about psychological impact, such as anxiety, anger, and depression for the spouse left behind, while being deployed can lead to feelings of anxiety, depression, and guilt for the military partner (Gambardella, 2008). Given these prior findings, it may be that secure, healthy attachment styles will be associated with decreased psychological distress in veterans. Two aspects of relationship attachment will be measured in

this study, attachment anxiety and attachment avoidance. Attachment anxiety refers to a fear of abandonment and rejection by partners, excessive need for approval, and distress at the unavailability of a partner (Mikulincer, Shaver, & Pereg, 2003). Attachment avoidance, on the other hand, includes fear of dependence and intimacy, an excessive need for self-reliance rather than other-reliance, and avoidance of self-disclosure (Mikulincer et al., 2003). People scoring highly on either of the dimensions are considered to have insecure attachment styles, while those scoring at lower levels are considered securely attached (Brennan, Clark, & Shaver, 1998).

A study examining these elements of attachment within the combat veteran population showed that veterans generally endorse an avoidant attachment style and that both attachment avoidance and anxiety are associated with PTSD symptom severity, while attachment avoidance had the strongest effect (Renaud, 2008). Renaud (2008) found that the belief that the world is unsafe contributes to this link and hypothesized that functioning in a chronically alarmed mood state may interfere with effective, rewarding interactions with others.

Unit Cohesion

In addition to their emotional attachment style with a significant other, emotional closeness with other military personnel may be important to service members' levels of distress and PTSD. A service member's perception of emotional closeness between themselves and other members of the military (including leaders, peers, and the military in general) is referred to as unit cohesion or deployment social support (King, King, & Vogt, 2003). Serving in a cohesive military unit is thought to buffer individuals from potentially negative effects of psychological distress (Lee, 1999). Although two veteran studies have shown no main effect between higher unit cohesion and lower PTSD severity (Fontana, Rosenheck, & Horvath, 1997;

Whitesell & Owens, in press), direct relationships between the two have been demonstrated in other studies with veterans (Armistead-Jehle, Johnston, Wade, & Ecklund, 2011; Brailey, Vasterling, Proctor, Constans, & Friedman, 2007; Iversen et al., 2008; McTeague, McNally, & Litz, 2004) and general psychological distress (Martin et al., 2000). More specifically, one study concerning veterans' functioning prior to their first deployments found that unit cohesion can lessen the impact of previous life stressors on their PTSD symptom severity (Brailey et al., 2007). Social support may assist in these ways through the interpersonal advantages it offers in the areas of social identity and emotional, informational, and appraisal aid (Cobb, 1976).

Research also has shown that supportive leadership behavior, an element of unit cohesion, may help reduce the amount of stress that military members experience (Britt, Davison, Bliese, & Castro, 2004) and that unit cohesion may influence pre- and post-deployment morale (Maguen & Litz, 2006). Social support from leaders is thought to be vital to improving the well-being of military members, particularly when those service members have experienced high levels of trauma (Lee, 1999). Thus, past research suggests that further exploration of unit cohesion with veterans of Iraq and Afghanistan could be beneficial in understanding post-deployment symptoms of PTSD and general distress.

"Big Five" Personality Factors

Personality may be an important factor influencing the combat veteran's mental health and is the second broad factor that will be explored in the current study. The most well-known model of personality, the Five Factor Model of Personality, commonly referred to as the "Big Five" (Digman, 1990), describes elements of personality in terms of five factors. These five factors are *neuroticism*, also known as low *emotional stability* and defined as the tendency to

experience emotional distress; *extraversion,* or the disposition toward positive emotions, high activity, and sociability; *openness,* defined as a receptive orientation toward novel experiences and ideas; *conscientiousness*, or the tendency toward persistence, organization, and industriousness; and *agreeableness,* defined as the inclination toward interpersonal trust and consideration of others (Costa & McCrae, 1985).

One study in the last decade has examined the Big Five personality characteristics in a sample of combat veterans. This study showed with a sample of Vietnam veterans that those with combat-related PTSD had extremely low emotional stability and agreeableness scores (Talbert, Braswell, Albrecht, Hyer, & Boudewyns, 1993). Although other research examining the relationships between PTSD or general distress severity and "Big Five" personality traits among war veterans is lacking, such personality measures have been used widely in other populations. Evidence suggests that comorbidity between anxiety and depression may be greatly influenced by neuroticism/negative emotionality and extraversion, two of the big five factors (Spinhoven, de Rooij, Heiser, Smit, & Penninx, 2009). Further, those with two or more psychiatric diagnoses are more likely to have lower emotional stability and extraversion than those only diagnosed with one disorder (Bienvenu et al., 2001). In addition to low emotional stability and extraversion, low extraversion and agreeableness have been shown to be associated with a higher incidence of affective disorders (Watson, Gamez, & Simms, 2005), which may be of particular importance given that depression is frequently comorbid with PTSD among military populations (Hoge et al., 2004). Concerning the openness factor, research has shown a negative relationship between openness traits and hospitalizations for depression (Kim, Joo, Kim, Lim, & Kim, 2011) and openness has been associated with a genetic risk for depression, although

emotional stability was associated even more strongly with this genetic risk (Kendler & Myers, 2010). Finally, Spinhoven and colleagues (2009) found that those seeking mental health care were lower in emotional stability, extraversion, and conscientiousness than comparable patients seeking physical health care, which suggests connections between mental health disorder symptoms and these personality factors.

Although limited research to date involving war trauma could be located, personality factors have been identified in physical trauma populations which may relate to the experiences of some veterans, given that a number do experience physical injury as a result of combat. In a study of men with spinal cord injuries, Krause and Rohe (1998) found that emotional stability and extraversion consistently associated with adjustment for participants, with emotional stability correlating negatively with poor emotional adjustment and extraversion positively with overall adjustment. In addition, Kurtz, Putnam, and Stone (1998) showed that in those with a traumatic injury of this type (spinal cord injury), individuals' self-reports and the reports of significant others reflected that their extraversion declined while their conscientiousness increased after the injury. This increase in conscientiousness and decrease in extraversion may correspond with the symptoms of hypervigilence and detachment from others that are often present in those suffering from post-traumatic stress symptoms (American Psychiatric Association, 2000). For this reason, it is hypothesized that emotional stability and extraversion are likely to be associated in similar ways to PTSD symptom severity and general distress levels in the current study. In addition to the research from the population of individuals with spinal cord injuries suggesting the importance of emotional stability, other evidence suggests that those who experience negative emotion consistently are particularly vulnerable to psychiatric illness

(Claridge & Davis, 2001). Therefore, it is further hypothesized that emotional stability will be negatively associated with PTSD and general psychological distress severity in our sample.

In terms of the five-factor personality traits in the emotional attachment literature, one study proposed that attachment theory is at times seen as a theory of personality dynamics (Roisman et al., 2007). Roisman and colleagues examined attachment among non-military populations and found a positive association between attachment anxiety and neurotic traits, while attachment avoidance correlated strongly in a negative direction with extraversion. Conscientiousness and extraversion also were marginally associated with security in attachment in this study. Similar relationships may occur among military veterans of Iraq and Afghanistan and will be explored in the current study.

Research with military populations has not tended toward use of the five factor model of personality, but has in one case examined personality in a two-dimensional model consisting of internalizing and externalizing types. These types can be seen on a continuum with "externalizers" on one end and "internalizers" on the other, with low-pathology individuals not tending toward either way of managing distress (Rielage, Hoyt, & Renshaw, 2010). Externalizers are characterized by expressing their distress in an outward fashion with behaviors toward others, while internalizers are likely to experience their distress internally, such as through mood. Research in a sample of OIF/OEF veterans shows that internalizers had higher rates of PTSD and depression than externalizers, suggesting the importance of this type of personality research with veterans suffering from symptoms of psychological distress.

Although studies have shown that personality pathology/disorders are common in war veterans (Dunn et al., 2004) and that veterans experiencing higher combat exposure are more

likely to show symptoms of personality disorder (Ghafoori & Hierholzer, 2010), little research attention has been paid to the ways in which non-pathological personality traits impact the mental health of combat veterans. Given the above review of the literature, some hypotheses may be formed related to the potential associations of the "big five" personality factors with other variables in the present study and are outlined in the next section. This study is the first of its kind to explore such questions in veterans of OIF and OEF from a "big five" personality standpoint.

Purpose of Present Study

The overall goal of the present study is to examine relationships among attachment style, unit cohesion, and personality traits and their impact on levels of PTSD symptomatology and general distress. In addition, this study will examine associations between perceived closeness with fellow service members and emotional attachment style with romantic partners. Finally, in order to uncover possible personality factors which impact the levels of psychological distress including PTSD symptomatology, the "Big Five" personality factors (openness, conscientiousness, extraversion, agreeableness, and emotional stability) will be explored.

Based on the literature review outlined above, two hypotheses will be examined in the current study:

Hypothesis 1: Unit cohesion, attachment anxiety and avoidance, and five personality factors (emotional stability, conscientiousness, agreeableness, openness, and extraversion) will be significantly associated with levels of general psychological distress and PTSD severity. Conscientiousness will be related in a positive direction and emotional stability, openness, agreeableness, and extraversion in a negative direction to distress and PTSD severity levels.

Hypothesis 2: Secure attachment style (defined as low levels of avoidant and anxious attachment) will moderate the effects of conscientiousness and extraversion and psychological distress and PTSD severity. Potential interactions between attachment style and conscientiousness as well as extraversion will be investigated.

As the number of service members participating in wars and returning to the United States increases, it is of prime importance that we understand aspects of their experiences which impact their psychological functioning. Through interpersonal relationships, many veterans may find strength, understanding, and the ability to cope. Further examining these aspects of the war fighter's experience may help us to serve those who have served in the United States Armed Forces. This research is vital given the gaps that exist in our understanding of associations of big five personality factors and attachment to psychological distress symptoms. Further, the all-volunteer force currently being used in Iraq and Afghanistan and the type of warfare that they are participating in is distinct from characteristics of past wars (Hoge et al., 2004). Though many service members pay a psychological toll for their commitments in these wars, through studies in this area, we may begin to offer understanding and to uncover ways to ease the burden.

Chapter 2

Method

Participants

Participants were 147 combat veterans of the current wars in Iraq and Afghanistan. The sample was made up of 81% males. In terms of race/ethnicity, participants were 88% Caucasian, 5% African American, 3% Hispanic, 1% Asian American, 1% Native American, and 2% who defined themselves as "multiracial" or "other." Mean age of participants was 35 years (SD = 8.21). When asked to indicate highest level of education completed, less than 1% of participants reported having "some high school" education, 11% reported being high school graduates, 37% reported having attended some college, 34% reported having a college degree, and 18% a graduate or professional degree. Eighty-two percent of participants were veterans of Iraq and 42% of Afghanistan, while some also served in another conflict, such as the Persian Gulf War (19%). Branch of service statistics indicated that 68% served in the Army, 17% in the Marine Corps, 8% in the Air Force, and 5% in the Navy. Finally, 58% of the sample served in the National Guard, 48% Active Duty, and 3% Reserves. Participants were able to select more than one theatre of service, branch of service, and duty status. Survey items are included in Appendix A.

Measures

PTSD Checklist - Military (PCL-M; Weathers, Litz, Herman, Huska, & Keane, 1993). The PCL-M is a 17-item self-report inventory designed to assess PTSD symptom severity among military populations. Respondents use a five-point anchored scale, ranging from 1 (*Not at all*) to 5 (*Extremely*), to report the extent to which they experience the 17 symptoms of Post Traumatic

Stress Disorder. These symptoms are directly adapted from the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994). Examples of symptom items which are rated in this way include, "Repeated, disturbing dreams of the stressful experience" and "Loss of interest in activities you used to enjoy." Scores range from 17 to 85, with higher scores indicating higher PTSD symptom severity. A cut-off of 50 indicates a probable PTSD diagnosis (Weathers et al., 1993). Internal consistency reliability and test-retest reliability with military samples have been .94 and .96, respectively (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Weathers et al., 1993). Concurrent validity has been supported, as evidenced by its significant associations with other measures of PTSD symptomatology (Blanchard et al., 1996). Internal consistency reliability for the current study was .96.

Deployment Social Support (King, King, Vogt, Knight, & Samper, 2006). The Deployment Social Support scale from the Deployment Risk and Resilience Inventory (King et al., 2006) consists of 12 items and is used to assess unit cohesion. Items are rated on a 5-point Likert scale, ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Total scores on the measure range from 12-60, with higher scores indicating greater perceived support and cohesion with the military. Example items include, "My unit was like a family to me," and "The military appreciated my service." Internal consistency reliability of this measure has been high (r = .97) with veteran samples across three psychometric studies (King et al., 2006). Preliminary support for its concurrent and discriminant validity has been demonstrated through its associations with mental health outcomes such as PTSD, anxiety, and depression and through its weak association with included measures of social desirability (King et al., 2006). While developed for military

who served during Gulf War I, the DRRI has been used with veterans of Iraq and has demonstrated similar psychometric properties (Vogt, Proctor, King, King, & Vasterling, 2008). Internal consistency reliability for the current study was .93.

Hopkins Symptom Checklist-21 (HSCL-21; Green, Walkey, McCormick, & Taylor, 1988). The HSCL-21 is a 21-item self-report inventory designed to assess general symptoms of mental distress. Symptoms are rated from 1 (*Not at all*) to 4 (*Extremely*) to indicate how distressing respondents have found them in the past 7 days. Sample items include, "Feeling lonely" and "Soreness of your muscles." The total score on the HSCL-21 indicates general psychological distress symptom severity. Internal consistency reliability (r=.89) was high for the total score and construct and concurrent validity have been supported for the measure through comparison of a clinical sample with a sample of nurses (Deane, Leathern, & Spicer, 1992). Additionally, validity is shown through its scores' significant correlations with scores on the State-Trait Anxiety Inventory for both state (r=.69) and trait (r=.81) anxiety, as well as significant correlation with scores on the Brief Hopkins Psychiatric Rating Scale (r=.54) in clinical samples (Deane et al., 1992). Internal consistency reliability for the current study was .95.

Experiences in Close Relationships Scale-Short Form (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007). This questionnaire measures two dimensions underlying adult attachment: anxiety about rejection and avoidance of closeness. The ECR-S consists of 12 items, half of which measure each dimension. Items are rated on a 7-point scale with responses ranging from 1 (*Disagree strongly*) to 7 (*Agree strongly).* The anxiety scale assesses the extent to which individuals are concerned about abandonment and being unloved by romantic partners. The

avoidance scale assesses the extent to which individuals are comfortable showing feelings and being close to romantic partners. The measure includes instructions which ask respondents how they "generally experience relationships, not just what is happening in a current relationship" (Brennan et al., 1998). This statement is thought to keep responses minimally influenced by current relationship circumstances as well as allowing veterans who are not in relationships an opportunity to provide responses.

The ECR-S was developed using a large sample of undergraduate students. Internal consistency reliabilities for the two subscales have been .78 (Anxiety) and .84 (Avoidance). Correlations between the subscales were low (r = .19), indicating that they measure two distinct attachment dimensions (Wei et al., 2007). Validity of the ECR-S was supported in both subscales showing significant associations with depression and in excessive reassurance seeking being significantly associated with attachment anxiety but not attachment avoidance (Wei et al., 2007). Internal consistency reliabilities for avoidant and anxious subscales in the current study were .81 and .73, respectively.

Combat Exposure Scale (Keane et al., 1989). The Combat Exposure Scale is a 7-item measure used to evaluate the wartime stressors of military personnel. Participants are asked to rate their exposure to a variety of combat situations, such as being under enemy fire, going on combat patrols, and having fellow service members killed or wounded. Responses are rated on a 5-point scale with item-specific anchors which indicate how many times that situation happened. Total scores, which are calculated using a sum of weighted scores, indicate the degree of combat exposure, with higher scores indicating higher levels of exposure. Keane et al. (1989) reported good internal consistency reliability (coefficient alpha = .85) and one-week test-retest reliability

(r = .97) for the scale. Scores on the CES have differentiated groups of PTSD versus non-PTSD veterans in previous research (Keane et al., 1989). In addition, validity is shown by a significant correlation between the CES and the Mississippi Scale for Combat Related PTSD (r = .43) in a sample of Vietnam veterans (Keane et al., 1989). Internal consistency reliability for the current study was .86.

International Personality Item Pool Big Five short-form questionnaire (IPIP; Goldberg, 1992). The 50-item IPIP inventory includes scales which assess the five factors of openness, conscientiousness, extraversion, agreeableness, and emotional stability, consistent with the Five Factor Model of Personality (Goldberg, 1992). Respondents rate the extent to which they perceive a phrase to be like them. Examples of items on the IPIP include: "Make plans and stick to them," "Make friends easily," and "Feel comfortable with myself." Responses are rated using a 5-point Likert-type scale ranging from 1 (*Very inaccurate*) to 5 (*Very accurate*). Internal consistency reliability estimates for scales of the IPIP in a volunteer sample were .79 (conscientiousness), .79 (openness), .85 (agreeableness), .89 (emotional stability), and .90 (extraversion). (Gow, Whiteman, Pattie, & Deary, 2005). The IPIP Big Five factor inventory has been found to have factorial and concurrent validity (Gow et al., 2005), to correlate strongly with both the NEO-FFI Five Factor Inventory and the Eysenck Personality Questionnaire – Revised Short-Form (Gow et al., 2005), and to have convergent validity with peer ratings (r = .50, SD = .11) (Mlacic & Goldberg, 2007). Internal consistency reliabilities for the current study were .86 (extraversion), .84 (agreeableness), .79 (conscientiousness), .78 (openness) and .88 (emotional stability).

Procedure

Participants were recruited via email research announcements (see Appendix B) sent to officers of organizations such as the Iraq War Veterans Association with a request to forward the announcement to eligible individuals. In addition, announcements were sent to veteran interest groups such as those on the Yahoo Groups website, with the group focus ranging from specific units or terms of duty to opinion-sharing groups on military topics. The research announcement explained that the researchers were conducting a study examining veterans' military experiences, perceptions of unit interaction, and perceptions of romantic relationships and that participation would be completely anonymous. Interested individuals used a hypertext link to connect to the survey website and were provided with informed consent information further explaining the purpose of the study (see Appendix C). Participants indicated their consent to participate by checking a box and were then directed to the survey items, including all measures described previously. Six chances to win a $50 gift certificate were included as monetary incentive for participation. Participants were informed of this drawing in the informed consent and their contact information was kept separate from their anonymous survey responses. All procedures were in full compliance with the university Institutional Review Board.

Data Analysis

Statistics were computed using SPSS software (version 17.0, SPSS Inc.). Means, standard deviations, and intercorrelations between all variables were conducted. Internal consistency reliability for all continuous scales was also calculated.

To investigate hypothesis 1, unit cohesion, attachment style, and the five personality factors (emotional stability, conscientiousness, openness, agreeableness, and extraversion) were tested for bivariate correlations with PTSD severity and psychological distress severity. Two

simultaneous regression analyses, predicting PTSD and general psychological distress, were then conducted with all variables showing significant correlations.

To investigate hypothesis 2, hierarchical multiple regressions performed above included a second step to test the possible moderating role of attachment style in the relationships between (1) conscientiousness and psychological distress and PTSD severity and (2) extraversion and psychological distress and PTSD severity. Conscientiousness, extraversion, and attachment scores were mean-centered and the centered values multiplied to obtain two interaction terms (conscientiousness x attachment and extraversion x attachment) (Aiken &West, 1991). To control for their effects, combat exposure and rank were entered as Step 1 in the model. The remaining main effects were entered simultaneously in Step 2 (hypothesis 1) and interactions at Step 3. To interpret significant interactions, the information was plotted in graphs (one for PTSD and one for general psychological distress) using an equation that includes terms for the main effects and the interaction term with the corresponding regression coefficients and regression constant (Aiken & West, 1991). For those interactions which were significant, low and high levels of attachment and personality variables were calculated and plotted on graphs using points one standard deviation above and below the mean to show their relationships with PTSD and psychological distress (Aiken &West, 1991).

Chapter 3

Results

Mental Health Symptoms

Means, standard deviations, skew, kurtosis, and correlations among the study variables are presented in Table 1**.** The mean for PTSD severity on the PCL-M was 31.45, with 15% of the sample at or above the recommended cut-off of 50 for a probable PTSD diagnosis (Weathers et al., 1993). The mean for general distress was 36, with a total possible score of 84. The mean on the CES (M= 15.8) indicates a light-moderate level of combat exposure (Keane et al., 1989).

In preliminary data analyses, rank was recoded to as either 0 (enlisted) or 1(officer) so that potential differences in variables of interest based on rank could be explored. An independent samples t-test was conducted using the recoded rank as the grouping variable. Significant differences (p<.05) were found between enlisted and officer ranks on PTSD severity, general distress severity, emotional stability, agreeableness, conscientiousness, and unit cohesion. Enlisted ranks had significantly higher mean scores on PTSD (t(135) = 3.00, p <.01) and distress severity (t(134) = 2.65, p <.01) and officer ranks had higher levels of three personality dimensions; agreeableness (t(121) = -2.80, p <.01), conscientiousness (t(134) = -3.38, p < .001), and emotional stability(t(137) = -3.23, p <.01), as well as unit cohesion (t(138) = -3.37, p < .001). Given these differences, rank was included in the regression models as a control variable.

To test hypothesis 1, a Pearson *r* correlation matrix was conducted to examine correlational relationships between PTSD, psychological distress, unit cohesion, attachment anxiety and avoidance, and five personality factors (emotional stability, conscientiousness,

agreeableness, openness, and extraversion).Significant positive correlations were found between both dependent variables, PTSD severity and general distress, and the following factors: combat exposure, anxious attachment, and attachment avoidance. Significant negative correlations were found between both dependent variables and the following factors: extraversion, emotional stability, agreeableness, conscientiousness, and rank. Openness was significantly negatively correlated with distress, but not PTSD. Unit cohesion was not significantly associated with levels of PTSD or psychological distress, nor was age. Our hypotheses regarding these correlations were supported with the exception of the unit cohesion result, the direction of the association between conscientiousness and the dependent variables, and the lack of correlation between openness and PTSD. Unit cohesion was hypothesized to have a significant negative correlation with both PTSD severity and general distress, but was in fact not significantly associated to either. Conscientiousness was hypothesized to be positively associated with PTSD severity and general psychological distress, but was in fact negatively correlated. Openness was hypothesized to be correlated with both dependent variables, but was in fact only significantly associated with distress.

Prediction of PTSD Severity and Psychological Distress

Prior to analyses, independent variables were checked for their appropriateness for multivariate analyses. Skewness, kurtosis, and multicollinearity were in acceptable ranges. Two simultaneous hierarchical multiple regressions were performed to assess whether independent variables (i.e., combat exposure, attachment avoidance and anxiety, and personality factors) were significantly associated with (1) levels of PTSD severity and (2) levels of general psychological distress, using all variables with significant correlations. To test hypothesis 2, these regressions

included a third step in the model to investigate the moderating effect of attachment anxiety and avoidance in the relationships between conscientiousness and extraversion and the dependent variables, PTSD severity and psychological distress. To determine whether moderation existed, conscientiousness, extraversion, attachment anxiety, and avoidant attachment scores were mean-centered and these centered values were multiplied to produce the resultant interaction terms (Aiken & West, 1991). Given its established impact on distress and PTSD severity, combat exposure was entered as step one in the model, along with rank. Step two variables included anxious and avoidance attachment, conscientiousness, extraversion, agreeableness, and emotional stability. In step three, the four interaction terms were added. Per Aiken and West (1991), interpreting interaction terms of this model was completed by calculating high and low categories of conscientiousness and anxious attachment using values one standard deviation above and below the mean. These values were then plotted for interpretation.

The overall model predicting PTSD severity was significant, $F(9, 106) = 22.83$, $p<.001$, adjusted $R^2 = .63$. Combat exposure ($\beta = .36$, $p<.001$), avoidance ($\beta = .21$, $p<.05$), emotional stability ($\beta = -.46$, $p<.001$), and the anxiety x conscientiousness interaction ($\beta = -.26$, $p<.001$) were significant in the model. Since only the attachment anxiety x conscientiousness interaction was significant, the remaining three interactions were dropped from the final model presented in Table 2. The interaction plot (see Figure 1) showed that at low levels of anxious attachment, PTSD severity is generally similar regardless of level of conscientiousness. However, at high levels of anxious attachment, as levels of conscientiousness increase, PTSD severity decreases.

The model predicting general psychological distress was also significant, $F(10, 101) = 14.16$, $p<.001$, adjusted $R^2 = .54$. Combat exposure ($\beta = .25$, $p<.001$), extraversion ($\beta = -.17$,

$p<.05$), emotional stability ($\beta = -.46$, $p<.001$), and the anxiety x conscientiousness interaction ($\beta = -.19$, $p<.05$) were significant. Similar to the PTSD model, since only the attachment anxiety x conscientiousness interaction was significant, the remaining three interactions were dropped from the final model. The general psychological distress interaction plot showed that at low levels of anxious attachment, distress severity was similar regardless of level of conscientiousness. However, at high levels of anxious attachment, as levels of conscientiousness increase, distress severity decreases (see Figure 2). Results of regression analyses are shown in Table 2.

Chapter 4

Discussion

The current study examined the effects of attachment anxiety and avoidance, unit cohesion, and personality factors on PTSD symptom severity and general psychological distress among OIF/OEF veterans. Multiple significant relationships were identified which inform the available literature describing mental health functioning of veterans of the current era of war veterans.

Mental Health Symptoms for the Sample

The percent of participants in this study (15%) meeting cut-off criteria for a probable PTSD diagnosis based on the PCL-M significance cut-off score of 50 is comparable to both the 14% rate reported in the RAND Corporation report of 2008 (Tanielian & Jaycox) and 18% reported of those who entered the Veterans Administration health care system between 2006 and 2008 (Seal et al., 2009). The mean for general distress (*M*=36) was slightly lower than in the treatment-seeking sample of non-military veterans (*M*=44.3) reported by the developers of the measure (Deane et al., 1992). The unit cohesion mean in the current study (*M*=44.7) is comparable to that reported by the scale's developers (*M*=44.9) in their samples of veterans from Gulf War I (King et al., 2006). Mean combat exposure in this sample represents a light-moderate level of exposure (Keane et al., 1989). Finally, participants of this study were roughly representative of the overall population in terms of branch of service, in that Department of Defense statistics (2009) show that 68% of service members deployed to Iraq and Afghanistan served in the Army while a far smaller percentage served in each of the other service branches.

Prediction of Severity of PTSD and Distress

It was hypothesized that conscientiousness would be positively associated with levels of PTSD and general psychological distress, that emotional stability, agreeableness, openness, extraversion, and unit cohesion would be negatively associated with these types of symptoms, and that attachment anxiety and avoidance would moderate the relationships between conscientiousness and extraversion and PTSD and general psychological distress. These hypotheses were supported with the exception of expected associations between unit cohesion and PTSD and distress severity, the direction of the association between conscientiousness and PTSD and distress severity, expected associations between openness and PTSD, and the moderating role of avoidant attachment style.

The findings suggest important roles of many of these variables, most notably emotional stability, or the tendency to be free from experiencing negative emotion. Those with low emotional stability had significantly higher levels of both PTSD and psychological distress; an association which was also found in prior research with Vietnam veterans (Talbert et al., 1996) and non-veteran research indicating that those experiencing consistent negative emotion are particularly vulnerable to psychiatric illness (Claridge & Davis, 2001). However, this study is the first to examine this relationship in veterans of Iraq and Afghanistan. The impact of emotional stability was central in this study, as it was also a significant predictor of general psychological distress. The central role of this factor in the current study indicates the need for future research concerning the underlying processes connecting emotional stability with psychological stress. In addition, the promotion of emotional stability in populations subject to traumatic stressors, such as veterans, could be an important protective measure. Military and

community leaders may consider the idea of implementing strategies to assist those with tendencies toward poor emotional stability (neuroticism) so that they may lower their chances of being affected by psychological stress symptoms after exposure to stressful situations. Examples of potential strategies include classes, lectures, and models related to positive coping skills and relaxation training. Further exploration of these personality variables and their relation to mental health in veterans is needed.

Attachment avoidance was also shown to be an important factor in this study, in that those with higher avoidant attachment reported higher levels of PTSD and psychological distress. This suggests that a lower level of avoidant attachment may serve as a protective factor against psychological stress in combat veterans. No previous research could be located which explored the relationships between attachment avoidance and symptoms of mental health symptoms, so this study represents the first of its kind to indicate the importance of this variable in both PTSD and general psychological distress.

Previous research (Bienvenu et al., 2001; Watson, et al., 2005) has suggested a negative relationship between extraversion and psychological distress, and the current study supports this finding. The significance of the relationship between extraversion and distress severity in this sample of military veterans along with prior similar findings in other populations suggests a need for clinicians and researchers to consider this element of the personality constellation in mental health.

The final significant predictor of both PTSD and general psychological distress was the interaction term, anxious attachment x conscientiousness. Results indicate that those low in conscientiousness are potentially more vulnerable to psychological stress when anxiously

attached. This signifies that promoting conscientiousness in veterans may reduce the impact of anxious attachment leading to PTSD and distress and that protective measures against PTSD and distress would be most valuable for those low in conscientiousness and high in anxious attachment. Implementing strategies for healthy relationship functioning and/or conscientiousness lifestyle habits may be beneficial to deployable service members. In addition, military leaders may be able to reduce distress among service members by promoting and reinforcing qualities consistent with conscientious personality traits (i.e., persistence, organization, and industriousness).

Concerning the other variables, most were significantly correlated as hypothesized, but were not significant in the regression models. Conscientiousness, agreeableness, and openness were not significantly associated with dependent variables as hypothesized in the regression models. In this sample, the impact of these variables was not as strong as the impact of emotional stability. Additionally, although anxious attachment was significant in the interaction term, it did not have a direct significant effect on mental health symptoms in this sample, which is surprising given that anxiety is a large part of both PTSD and general psychological distress symptoms. Judging from this result, perhaps romantic relationship anxiety is somehow different or not completely related to generalized anxiety or the anxiety typical of PTSD symptoms. Further exploration as to why attachment avoidance was a significant predictor of mental health distress while anxious attachment was not is also encouraged.

One outcome which was not supported by the current research was particularly surprising, namely that unit cohesion was not significantly related to mental health outcomes. This finding is surprising given that prior research suggests its importance (Brailey et al., 2007;

Martin et al., 2000; McTeague et al., 2004); however, other studies have also shown no direct relationship between unit cohesion and PTSD in veterans (Fontana, et al., 1997; Whitesell & Owens, in press). There are several potential reasons for this result. One possible explanation could be that the current sample is comprised of a large number of veterans of National Guard status (59%). Veterans of this duty status may differ in their experiences of unit cohesion, deployment experiences, or mental health functioning in some way from those of active duty and reserve statuses. This explanation is plausible given that National Guard forces do not live on military bases, but commute from civilian homes and other jobs (Friedman, 2006). They therefore may lack an important element of unit cohesion and interpersonal support from brothers-in-arms. A second theory is that in addition to its positive effects, high unit cohesion may also lead to increased negative feelings such as loss and guilt following the death of a comrade, therefore increasing PTSD symptoms in response (Milgram & Hobfoll, 1986). Lastly, we do not know from in the current sample how much time had passed since participants had served with their units. Experiences during this time frame may impact reports of unit cohesion during the time of their deployments. Further research in this area clarifying the role of unit cohesion in mental health outcomes is necessary.

The other outcome which was the opposite of the original hypothesis was the correlation between conscientiousness and PTSD and distress severity. This was hypothesized to be a positive correlation, based on research showing that those with serious physical injuries saw an increase in conscientiousness around the same time (Kurtz et al., 1998). However, it appears that the current study supports other research indicating that those seeking mental health services tend to be lower in conscientiousness suggesting higher levels of distress associated with this

construct (Spinhoven et al., 2009). It is possible given this result that higher conscientiousness may be a protective factor against psychological distress and PTSD, but understanding these variables and their relationships to one another necessitates further research.

Limitations

While this research has added to the available literature on the personal and interpersonal factors associated with psychological distress symptoms in the current era of combat veterans, the present study has several limitations. First, utilizing a volunteer sample, it is not possible to assess differences between those who chose to respond to the survey advertisement and those who did not. Respondents may value mental health research more highly or may have been more interested in responding based on their own higher or lower levels of psychological distress. In addition, it is unclear whether those who completed the survey were in fact veterans of the current wars or responded honestly when completing the survey; however, the likelihood of dishonest responding is low, given that a relatively minimal monetary incentive for participation was offered.

In terms of the combat experience demographics of participating veterans, combat duties may have spanned many units and times of service since the beginning of the wars in Iraq and Afghanistan and these data were not recorded. It should also be noted that all study variables were collected post-deployment to combat and without pre-deployment measurement. Therefore, ratings of attachment and personality styles and unit cohesion at that time cannot be included in analyses and it is not possible to deduce causation or determine how levels of emotional stability or ratings of attachment style may have changed due to combat service. Finally, the current sample was primarily Caucasian, from the Army branch of service, and of National Guard status,

which limits the generalizability of findings to all military service members. Further research in this area is recommended using a larger, more ethnically diverse sample with a broader representation of service branches and duty statuses.

Future Directions

This study identifies the potential associations between attachment style and personality factors and levels of psychological distress in veterans of Iraq and Afghanistan. Further research investigating specific cognitive and affective elements of personal and interpersonal functioning which are associated with lower incidence of mental health symptoms would be valuable, as well as clarifying the elements which put veterans more at risk for developing these symptoms. It is the hope of the author that the military may be able to successfully implement training strategies based on this research using factors such as attachment and personality factors to improve unit functioning and emotional conditions for war veterans. Such efforts are warranted given the research suggesting the importance of interpersonal relationships in the coping and mental health functioning of service members (Martin et al., 2000; Evans et al., 2009).

Finally, longitudinal research designs utilizing both pre-deployment and post-deployment measurement will allow for investigation of change over time in these variables and how pre-deployment levels of these factors may influence post-deployment PTSD or distress. Since the current research employed a cross-sectional design, it is unclear exactly how these factors have influenced one another and have been affected by their combat service.

Conclusion

Results of this study add to the available literature on protective factors against post-combat distress. The important association between levels of emotional stability and PTSD and

psychological distress severity was shown throughout this study in that those with lower emotional stability reported higher levels of both types of distress. If effective methods of promoting emotional stability and strong and reliable interpersonal relationships can be discovered and implemented, the men and women of the United States Armed Forces may be benefited in their overall mental health experience and the psychological wounds of combat may be reduced for service members in the future.

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Appendix

Table 1

Means, standard deviations, and correlations between independent and dependent variables

	Range	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. PTSD (PCL-M)	17-80	30.97	15.44	--	--	--	--	--	--	--	--	--	--	--
2. General Distress (HSCL)	21-83	35.83	13.52	.825**	--	--	--	--	--	--	--	--	--	--
3. Combat Exposure (CES)	7-31	15.82	5.85	.521**	.391**	--	--	--	--	--	--	--	--	--
4. Anxious Attachment (ECR-S)	6-39	17.01	7.72	.402**	.477**	.199*	--	--	--	--	--	--	--	--
5. Avoidant Attachment (ECR-S)	6-40	17.07	8.49	.440**	.407**	.187*	.311**	--	--	--	--	--	--	--
6. Unit Cohesion	12-60	44.66	10.68	-.080	-.060	.067	-.169*	-.266**	--	--	--	--	--	--
7. Emotional Stability	10-50	31.82	8.42	-.640**	-.684**	-.254**	-.485**	-.328**	.121	--	--	--	--	--
8. Conscientiousness	21-50	38.85	5.99	-.279**	-.298**	.031	-.167	-.371**	.208*	.345**	--	--	--	--
9. Agreeableness	15-49	35.63	7.11	-.379**	-.320**	-.189*	-.170*	-.377**	.140	.388**	.418**	--	--	--
10. Extraversion	9-44	27.83	7.00	-.373**	-.412**	-.006	-.231**	-.355**	.143	.399**	.281**	.379**	--	--
11. Openness	22-50	36.09	5.99	-.101	-.208*	.020	-.197*	-.200*	.161	.243**	.442**	.295**	.405**	--
12. Rank[a]	0-1	.35	.48	-.216**	-.197*	-.013	-.116	-.151	.276**	.266**	.280**	.221**	.053	.209*

* $p<.01$, ** $p<.001$

[a] Rank was dummy coded with enlisted rank coded as 0 and officer rank as 1

Table 2

Multiple regression analyses predicting PTSD severity and psychological distress (Final step of model)

	PTSD[a]			Distress[b]		
Predictors[d]	*B*	SE	β	*B*	SE	β
Step 1						
Combat Exposure	1.34	.20	.51**	.87	.19	.40**
Rank	-7.95	2.44	-.25*	-5.67	2.25	-.22*
Step 2						
Combat Exposure	1.00	.17	.38**	.58	.16	.27
Rank	-2.93	2.10	-.09	-1.00	1.93	-.04
Anx. Attachment[c]	.06	.14	.03	.21	.14	.13
Attachment Avoid.	.26	.13	.14	.12	.12	.07
Emotional Stability	-.72	.15	-.42**	-.65	.14	-.42**
Conscientiousness[c]	-.03	.15	-.39**	-.12	.19	-.06
Agreeableness	-.02	.16	-.01	.02	.15	.01
Extraversion	-.31	.17	-.13	-.34	.16	-.17*
Step 3						
Combat Exposure	.94	.16	.36**	.55	.15	.25**
Rank	-.56	2.02	-.02	.43	1.94	.02
Anx. Attachment[c]	-.01	.13	-.01	.20	.13	.12
Avd. Attachment	.38	.13	.21*	.17	.12	.11

Table 2 Continued

	PTSD[a]			Distress[b]		
Predictors[d]	*B*	SE	β	*B*	SE	β
Emotional Stability	-.85	.14	-.46**	-.71	.13	-.46**
Conscientiousness[c]	-.07	.18	-.03	-.11	.18	-.05
Agreeableness	-.01	.15	-.00	.02	.14	.01
Extraversion	-.29	.16	-.12	-.34	.15	-.17*
Anx. Attachment X Conscientiousness	-.09	.02	-.26**	-.06	.02	-.19*

Note. * $p<.05$, ** $p<.001$

[a]Adj. $R^2 = .63$, ΔR^2 Step 1 = .33, ΔR^2 Step 2 = .27, ΔR^2 Step 3 = .06

[b]Adj. $R^2 = .54$, ΔR^2 Step 1 = .21, ΔR^2 Step 2 = .34, ΔR^2 Step 3 = .03

[c]Centered values

[d]The interactions between anxious attachment X extraversion, avoidant attachment X extraversion, and avoidant attachment X conscientiousness were not significant and were dropped from the final model.

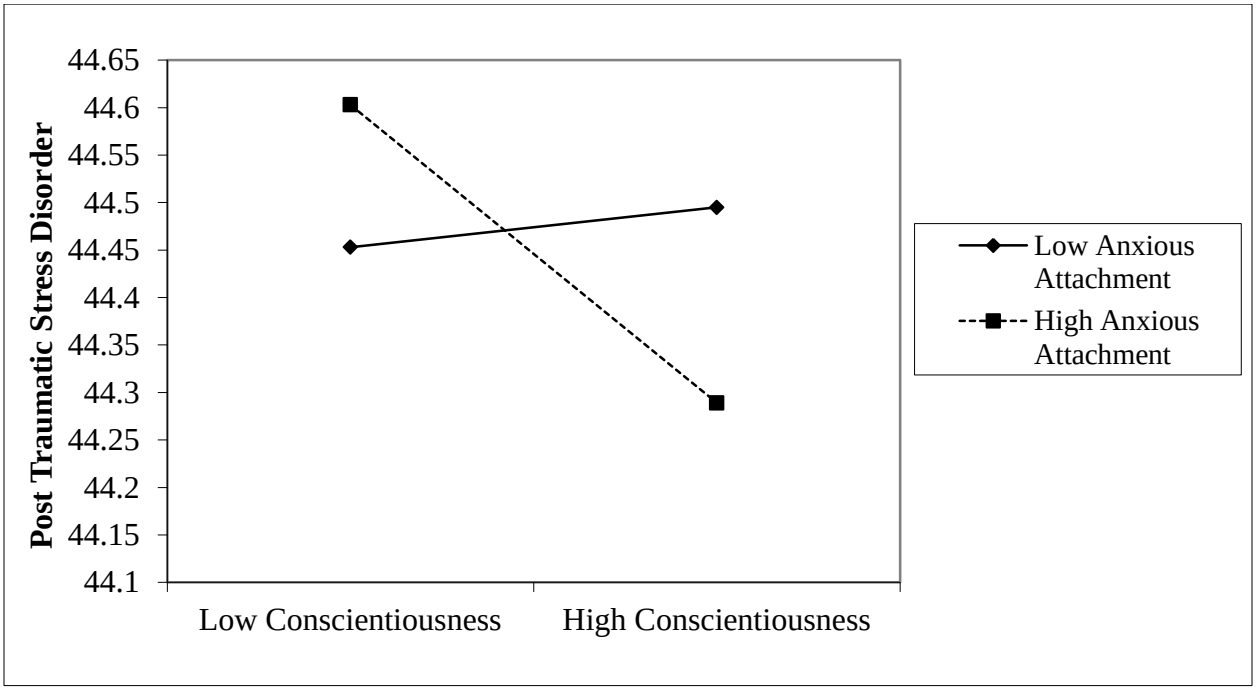

Figure 1

Interaction Plot: PTSD[a]

[a] The interaction between anxious attachment and conscientiousness, with PTSD as dependent variable. For both variables, low = one standard deviation below the mean and high = one standard deviation above the mean.

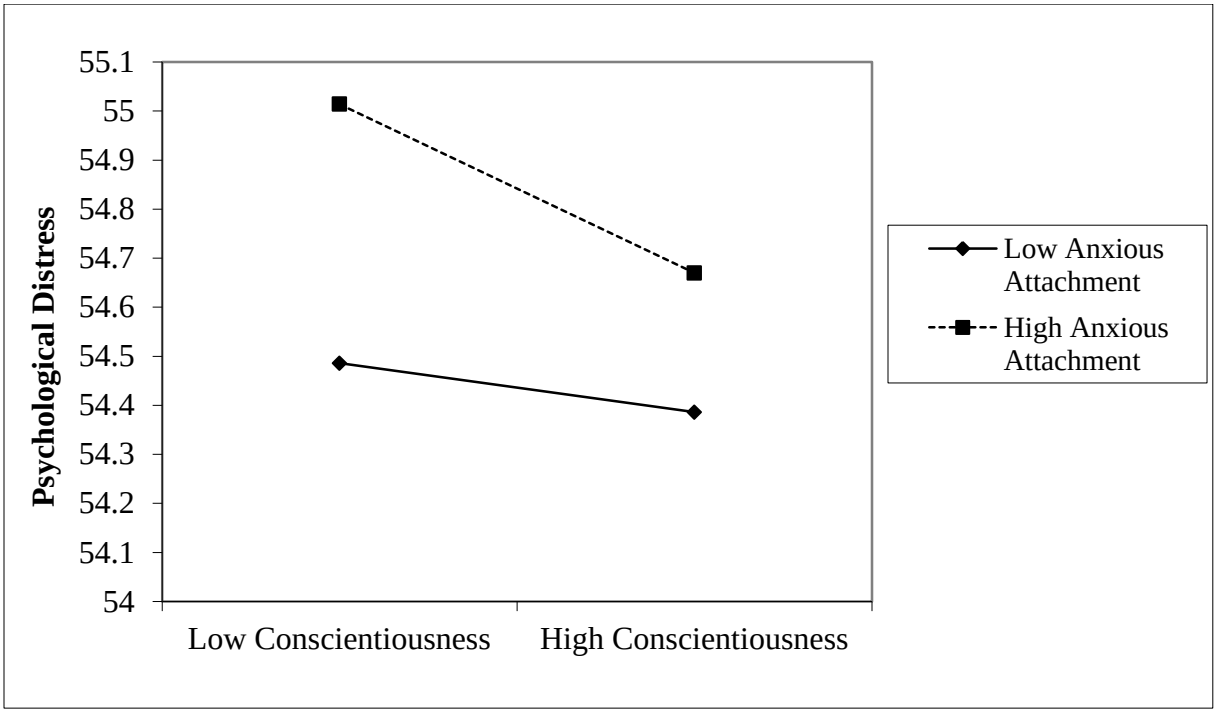

Figure 2

Interaction Plot: Psychological Distress[a]

[a] The interaction between anxious attachment and conscientiousness, with PTSD as dependent variable. For both variables, low = one standard deviation below the mean and high = one standard deviation above the mean.

Appendix A

Survey Items

[1. Demographic Information]

Please answer the following questions.

1. What is your age (in years)?

2. What is your sex?
   - Female
   - Male

3. What is your highest level of education completed?
   - Some high school
   - High school graduate
   - Some college
   - College degree
   - Graduate/professional degree

4. What is your Race/Ethnicity? (Check all that apply.)
   - Caucasian/White/European-American
   - African-American
   - Asian-American/Pacific Islander
   - Hispanic-American/Latino
   - Native American/First Nations/Native Alaskan
   - Multiracial/Other (please specify)

5. What is your employment status?
   - Not employed
   - Student
   - Employed part-time
   - Employed full-time

6. What is your approximate annual household income?
   - Under $10,000
   - $10,000 - $19,999
   - $20,000 - $29,999
   - $30,000 - $39,999
   - $40,000 - $49,999
   - $50,000 - $59,999
   - $60,000 – $69,999
   - $70,000 - $79,999
   - $80,000 - $89,999
   - $90,000 – $99,999
   - $100,000 - $110,999
   - $111,000 - $119,999

$120,000 - $129,999
$130,000 or more

7. In what branch of service did you/do you serve: (Check all that apply)
   Army
   Navy
   Marine Corps
   Air Force
   Coast Guard

8. When you served in the military, were/are you: (Check all that apply.)
   Active duty
   Reserve
   National Guard

9. During which service era(s) did you serve? (Check all that apply)
   Pre-World War II
   World War II
   Pre-Korean War
   Korean War
   Between Korean and Vietnam Wars
   Vietnam War
   Post Vietnam
   Persian Gulf War
   Iraq (current)
   Afghanistan (current)
   Other (please list)

10. What is your current military rank ?

O Officer	O 1
O Enlisted	O 2
	O 3
	O 4
	O 5
	O 6
	O 7
	O 8
	O 9

[2. Combat Exposure Scale]

Please circle the number that corresponds to the answer that best describes your experience.

1. Did you ever go on combat patrols or have other dangerous duty?
   1. No
   2. 1-2x
   3. 4-12x
   4. 13-50x

5. 51+ times

2. Were you ever under enemy fire?
   1. No
   2. 1-2x
   3. 3-12x
   4. 13-25x
   5. 26+ times

3. Were you ever surrounded by the enemy?
   1. No
   2. 1-2x
   3. 3-12x
   4. 13-25x
   5. 26+ times

4. What percentage of soldiers in your unit were killed (KIA), wounded or missing in action (MIA)?
   1. None
   2. 1-25%
   2. 26-50%
   4. 51-75%
   5. 76% or more

5. How often did you fire rounds at the enemy?
   1. Never
   2. 1-2x
   3. 3-12x
   4. 13-50x
   5. 51 or more

6. How often did you see someone hit by incoming or outgoing rounds?
   1. Never
   2. 1-2x
   3. 3-12x
   4. 13-50x
   5. 51 or more

7. How often were you in danger of being injured or killed (i.e., being pinned down, overrun, ambushed, near miss, etc.)?
   1. Never
   2. 1-2x
   3. 3-12x
   4. 13-50x
   5. 51 or more

[3. <u>PTSD Checklist – Military</u>]

Here is a list of problems and complaints that people sometimes have	NOT AT ALL (1)	A LITTLE BIT (2)	MODERATELY (3)	QUITE A BIT (4)	EXTREMELY (5)

in response to stressful military experiences. Please read each one carefully, and then indicate, using the numbers to the right, how much you have been bothered by that problem **IN THE PAST WEEK**.

1. Repeated, disturbing memories, thoughts, or images, of the stressful experience…	1	2	3	4	5
2. Repeated, disturbing dreams of the stressful experience……	1	2	3	4	5
3. Suddenly acting or feeling as if the stressful experience was happening again (as if you were reliving it)?…….	1	2	3	4	5
4. Feeling very upset when something reminded you of the stressful experience?...	1	2	3	4	5
5. Having physical reactions (e.g., heart pounding, trouble breathing, sweating) when something reminded you of the stressful experience?	1	2	3	4	5
6. Avoiding thinking about or talking about the stressful experience or avoiding having feelings related to it?……	1	2	3	4	5
7. Avoiding activities or situations because they reminded you of the stressful experience?…….	1	2	3	4	5
8. Trouble remembering important parts of the stressful experience?	1	2	3	4	5
9. Loss of interest in activities that you used to enjoy?……..	1	2	3	4	5
10. Feeling distant or cut off from other people?…….	1	2	3	4	5
11. Feeling emotionally numb or being unable to have loving feelings for those close to you?……...	1	2	3	4	5
12. Feeling as if your future will somehow be cut short?…….	1	2	3	4	5
13. Trouble falling or staying asleep?……...…	1	2	3	4	5
14. Feeling irritable or having angry outbursts?……..	1	2	3	4	5
15. Having difficulty concentrating?……	1	2	3	4	5
16. Being "super-alert" or watchful or on guard?…….	1	2	3	4	5
17. Feeling jumpy or easily startled?……	1	2	3	4	5

[4. Experiences in Close Relationships Scale - Short Form]

Instructions: The following statements concern how you feel in romantic relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by indicating how much you agree or disagree with it. Circle the number that best indicates your answer using the following scale:

1 (Disagree Strongly) 2 3 4 (Neutral/mixed) 5 6 7 (Agree Strongly)

1. I worry that romantic partners won't care about me as much as I care about them.
2. I want to get close to my partner, but I keep pulling back.
3. I am nervous when partner get too close to me.
4. My desire to be very close sometimes scares people away.
5. I try to avoid getting too close to my partner.
6. I need a lot of reassurance that I am loved by my partner.

7. I do not often worry about being abandoned.
8. I find that my partner(s) don't want to get as close as I would like.
9. I usually discuss my problems and concerns with my partner.
10. I get frustrated if romantic partners are not available when I need them.
11. It helps to turn to my romantic partner in times of need.
12. I turn to my partner for many things, including comfort and reassurance.

[5. Hopkins Symptom Checklist – 21]

How have you felt during the **past seven days**, including today? Use the following scale to describe how distressing you have found these things over this time.

Not at All	A Little	Quite A Bit	Extremely
1	2	3	4

_____ 1. Difficulty in speaking when you are excited

_____ 2. Trouble remembering things

_____ 3. Worried about sloppiness or carelessness

_____ 4. Blaming yourself for things

_____ 5. Pains in the lower part of your back

_____ 6. Feeling lonely

_____ 7. Feeling blue

_____ 8. Your feelings being easily hurt

_____ 9. Feeling others do not understand you or are unsympathetic

_____ 10. Feeling that people are unfriendly or dislike you

_____ 11. Having to do things very slowly in order to be sure you are doing them right

_____ 12. Feeling inferior to others

_____ 13. Soreness of your muscles

_____ 14. Having to check and double check what you do

_____ 15. Hot or cold spells

_____ 16. Your mind going blank

_____ 17. Numbness or tingling in parts of your body

_____ 18. A lump in your throat

_____ 19. Trouble concentrating

_____ 20. Weakness in parts of your body

_____ 21. Heavy feelings in your arms or legs

[6. Unit Cohesion]

The statements below are about your relationships with other military personnel while you were deployed. Please read each statement and describe how much you agree or disagree by circling the number that best fits your answer.

	Strongly disagree	**Somewhat Disagree**	**Neither Agree nor Disagree**	**Somewhat Agree**	**Strongly Agree**
1. My unit was like family to me.	**1**	**2**	**3**	**4**	**5**
2. I felt a sense of camaraderie between myself and other soldiers in my unit.	**1**	**2**	**3**	**4**	**5**
3. Members of my unit understood me.	**1**	**2**	**3**	**4**	**5**
4. Most people in my unit were trustworthy.	**1**	**2**	**3**	**4**	**5**
5. I could go to most people in my unit for help when I had a personal problem.	**1**	**2**	**3**	**4**	**5**
6. My commanding officer(s) were interested in what I thought and how I felt about things.	**1**	**2**	**3**	**4**	**5**
7. I was impressed by the quality of leadership in my unit.	**1**	**2**	**3**	**4**	**5**
8. My superiors made a real attempt to treat me as a person.	**1**	**2**	**3**	**4**	**5**
9. The commanding officer(s) in my unit were supportive of my efforts.	**1**	**2**	**3**	**4**	**5**
10. I felt like my efforts really counted to the military.	**1**	**2**	**3**	**4**	**5**
11. The military appreciated my service.	**1**	**2**	**3**	**4**	**5**
12. I was supported by the military.	**1**	**2**	**3**	**4**	**5**

[7. International Personality Item Pool Big Five Short Form Questionnaire]

On the following pages, there are phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes *you*. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then fill in the bubble that corresponds to the number on the scale.

	Very Inaccurate	Moderately Inaccurate	Neither Accurate Nor Inaccurate	Moderately Accurate	Very Accurate
1. Am the life of the party.	O	O	O	O	O
2. Feel little concern for others.	O	O	O	O	O
3. Am always prepared.	O	O	O	O	O
4. Get stressed out easily.	O	O	O	O	O
5. Have a rich vocabulary.	O	O	O	O	O
6. Don't talk a lot.	O	O	O	O	O
7. Am interested in people.	O	O	O	O	O
8. Leave my belongings around.	O	O	O	O	O
9. Am relaxed most of the time.	O	O	O	O	O
10. Have difficulty understanding abstract ideas.	O	O	O	O	O
11. Feel comfortable around people.	O	O	O	O	O
12. Insult people.	O	O	O	O	O
13. Pay attention to details.	O	O	O	O	O
14. Worry about things.	O	O	O	O	O
15. Have a vivid imagination.	O	O	O	O	O
16. Keep in the background.	O	O	O	O	O
17. Sympathize with others' feelings.	O	O	O	O	O
18. Make a mess of things.	O	O	O	O	O
19. Seldom feel blue.	O	O	O	O	O
20. Am not interested in abstract ideas.	O	O	O	O	O
21. Start conversations.	O	O	O	O	O
22. Am not interested in other people's problems.	O	O	O	O	O
23. Get chores done right away.	O	O	O	O	O
24. Am easily disturbed.	O	O	O	O	O
25. Have excellent ideas.	O	O	O	O	O
26. Have little to say.	O	O	O	O	O
27. Have a soft heart.	O	O	O	O	O
28. Often forget to put things back in their proper place.	O	O	O	O	O
29. Get upset easily.	O	O	O	O	O
30. Do not have a good	O	O	O	O	O

imagination.

31. Talk to a lot of different people at parties.	O	O	O	O	O
32. Am not really interested in others.	O	O	O	O	O
33. Like order.	O	O	O	O	O
34. Change my mood a lot.	O	O	O	O	O
35. Am quick to understand things.	O	O	O	O	O
36. Don't like to draw attention to myself.	O	O	O	O	O
37. Take time out for others.	O	O	O	O	O
38. Shirk my duties.	O	O	O	O	O
39. Have frequent mood swings.	O	O	O	O	O
40. Use difficult words.	O	O	O	O	O
41. Don't mind being the center of attention.	O	O	O	O	O
42. Feel others' emotions.	O	O	O	O	O
43. Follow a schedule.	O	O	O	O	O
44. Get irritated easily.	O	O	O	O	O
45. Spend time reflecting on things.	O	O	O	O	O
46. Am quiet around strangers.	O	O	O	O	O
47. Make people feel at ease.	O	O	O	O	O
48. Am exacting in my work.	O	O	O	O	O
49. Often feel blue.	O	O	O	O	O
50. Am full of ideas.	O	O	O	O	O

Appendix B

Research Announcement

Attention Military Veterans of Iraq and/or Afghanistan

A research study examining veterans' experiences with military service and reactions to these experiences is being conducted by Allison Whitesell, B.S., doctoral student at University of Tennessee-Knoxville. The online survey assesses experiences with military service, current mental health symptoms, unit interaction and ways of interacting with significant others, and other thoughts related to your service experience. If you are an American military veteran of Iraq and/or Afghanistan who is 18 years or older, you are eligible to participate.

The survey is anonymous and takes approximately 15-20 minutes to complete. Your participation will remain anonymous. If you would like to participate in this research study, please type the following hypertext link into your browser.

[insert url]

This will take you to the consent form and questionnaire. This research protocol has been reviewed and approved by the Institutional Review Board for protection of human subjects at the University of Tennessee. Please feel free to forward this announcement to eligible friends/colleagues you know who may wish to participate. Thank you in advance for your help with this project! Your participation may help improve veterans' mental health.

Sincerely,
Allison Whitesell, B.S., Doctoral Student
Department of Psychology
University of Tennessee
Phone: 865-974-2204
E-mail: awhitese@utk.edu

Faculty Advisor:
Gina P. Owens, Ph.D.
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University of Tennessee
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Appendix C

Information Page

Factors Influencing Veterans' Psychological Health

Dear Participant:

You are invited to participate in a research study being conducted by Allison Whitesell, B.S., a doctoral student at the University of Tennessee. The purpose of this study is to obtain information about military experiences, perceptions of unit interaction, and other characteristics about how you interact or relate with others of veterans of Iraq and/or Afghanistan. Another purpose of the study is to gather information about mental health symptoms you may be experiencing following deployment to a war zone.

To be eligible for this study, you must be a military veteran, at least 18 years old, who served in Iraq and/or Afghanistan. Your participation in this study is strictly voluntary. You may choose not to participate or to discontinue participation at any time. If you exit the survey prior to completing it, your data will not be used. If you choose to participate, you will be asked to select responses to a questionnaire that takes approximately 20 minutes to complete. Any information obtained in connection with this study will remain confidential. The data will be summarized and reported in group form.

Some individuals may experience discomfort when answering survey questions if they consider the information to be sensitive. Thus, you may choose not to answer any question that you do not want to answer. If you do experience distress or discomfort as a result of participating in this survey, we encourage you to contact your local mental health professional or one of the following organizations:

American Psychological Association (APA) Help Center: http://www.apahelpcenter.org/

National Center for PTSD: http://www.ncptsd.va.gov/

The information you provide may be helpful in increasing our understanding of veterans' reactions to war and improving mental health care, although the information collected may not benefit you directly. It is suggested that you print this informed consent page for future reference.

If you have any questions or comments about this research project, please contact Allison Whitesell at awhitese@utk.edu (Ph: 260-418-3583). If you would like to receive a brief written summary of the results when the study is complete, please send a request to Allison Whitesell via e-mail at awhitese@utk.edu (please write "Deployment Survey Results" in the subject line). This research has been reviewed and approved by the Institutional Review Board for protection of human subjects at the University of Tennessee-Knoxville. If you have questions about your rights as a participant, please contact the University of Tennessee Office of Research Compliance Officer at (865) 974-3466.

Sincerely,

Allison Whitesell, B.S.
Doctoral Student

Gina P. Owens, Ph.D., Faculty Advisor
Assistant Professor

Department of Psychology
University of Tennessee-Knoxville

Department of Psychology
University of Tennessee-Knoxville

By marking the "yes" button below, you are giving your consent to participate.

☐ Yes, I consent to participate.

☐ No, I do not wish to continue to the survey.

Vita

Allison A. Whitesell was born in Fort Wayne, Indiana and attended Northrop High School. She then earned her Bachelor of Science degree in psychology from Valparaiso University, where she was a catcher for the softball team. Following graduation from Valparaiso, she began her training in counseling psychology at the University of Tennessee Knoxville, specializing in research and clinical work with combat veterans of Iraq and Afghanistan. She completed her dissertation project in May 2011 before beginning a clinical pre-doctoral internship at the Naval Medical Center San Diego. Upon completion of this internship year, Allison will graduate from the University of Tennessee with her Doctor of Philosophy degree in psychology and continue serving as an active duty psychologist in the United States Navy.